REMARKS:

This is in response to the final Office Action dated June 7, 2005. Applicant submits that the cited prior art fails to teach the present invention. There is no motivation to make the combinations set out in the Office Action. Even if the combination were for some unknown reason made, the result of the combination would be inoperative and would not meet the pending claims. Reexamination and prompt favorable action is respectfully requested.

As a preliminary point, it is important to note that the primary cited reference, the Hiyoshi patent, relies on a voltage supply that does not generate any voltage or power from light. The only light-responsive part of the Hiyoshi patent is the phototransistor (such as 12b), which acts like a photo-resistor and also does not generate any voltage or power from light. Thus, the circuitry of the Hiyoshi patent does not meet the claim 1 requirement of "series-connected light-receiving devices that receive the emitted light to generate a voltage." As discussed in greater detail below, the prior art neither describes nor suggests the quoted aspect of claim 1. Consequently, the pending claims should be allowed.

The final Office Action cites the application's admitted prior art of pages 1-2 and Figures 12 and 13A-13E and states that "Hiyoshi teaches using a light-receiving circuit or device that receives light from a light emitting circuit or device to generate voltage. ... It would have been obvious to one of ordinary skill in the art of making semiconductor devices to generate voltage for the apparatus of AAPA as taught by Hiyoshi because the generated voltage can be controlled by controlling the intensity of the received light." The Office Action cites a clause of claim 8 of the Hiyoshi patent as providing these teachings.

There is nothing in the Hiyoshi patent about generating ***voltage*** to drive a circuit such as a MEMS switch. Rather the phototransistors of the Hiyoshi patent are variable resistors that can be used ***as part of*** a current source. What the

Hiyoshi patent describes is an optical isolation device for an analog modem. An example of the optical device 12 is shown in FIG. 1 and described in column 10 as including a phototransistor 12b. AC power supply Z applies alternating voltages to bridge circuit 11. The phototransistor 12b acts as a switch or variable resistor depending on how the modem is configured. In response to light from photodiode 12a, the phototransistor 12b becomes conducting to connect points A and C in the bridge circuit 11.

FIG. 15 is a good illustration of the light receiving circuit of the Hiyoshi patent. FIG. 15 shows a phototransistor 802b connected between a power supply voltage and ground. Phototransistor 802b is connected in series with a fixed resistor 803. Light incident from diode 802a on phototransistor 802b causes the phototransistor 802b to become more conductive, allowing current to flow through phototransistor 802b and creating a voltage drop across resistor 803 that is measured by DC detector 805. The combination of the phototransistor, which acts in the circuit as a variable resistor, and the voltage source (independent from and attached to the phototransitor 802b) makes a current source. As stated in the description of FIG. 15 in column 21, lines 45-49 of the Hiyoshi patent, "light ... received by the light receiving device 802b" outputs "a current corresponding to the received light volume." It is consequently clear that the phototransistor 802b acts as a variable resistor and requires ***an external voltage supply*** to operate. When it operates, light incident on the phototransistor 802b reduces the resistance of the phototransistor 802b ***and reduces the voltage across the phototransistor 802b***.

Because the phototransistor is a variable resistor and not a voltage source, no one of ordinary skill would understand the phototransistor to meet claim 1's limitation of "a light-receiving circuit having a series circuit of series-connected light-receiving devices that receive the emitted light to generate a voltage." The phototransistors of the Hiyoshi patent do not receive emitted light to generate a

voltage. In the absence of the voltage supply attached to the Hiyoshi patent phototransistor, there would be no change in voltage associated with the phototransistor. Thus, nothing in the Hiyoshi patent's circuit ***receives*** light to ***generate and voltage***. Consequently the phototransistor 12b or 802b of the Hiyoshi patent does not meet claim 1's definition of a "light-receiving device."

Nor would it have been obvious to incorporate the phototransistor of the Hiyoshi patent in the MEMS circuitry described in the background of the present application. As is clear from the background, the MEMS devices of the background require a comparatively high voltage to operate. Rather than generating a voltage, the phototransistor 12b of FIG. 1 of the Hiyoshi patent receives light and becomes more conductive, reducing the voltage across the phototransistor. Consequently it would not have been obvious to use the phototransistor 12b or 802b of the Hiyoshi patent in the MEMS device of the application's background ***because that substitution would render the MEMS device inoperative***. The substitution of the Hiyoshi patent phototransistor would not be obvious because the Hiyoshi patent's phototransistor would reduce the available driving voltage to zero rather than providing a useful voltage for MEMS movement. Thus, if the circuit of the Hiyoshi patent were inserted into the device described in the background of the application, the resulting device would not operate and could not render obvious claim 1. Specifically the resulting combination would not receive light to generate a voltage. Even if the Hiyoshi patent's phototransistor 12b were connected in series, no voltage would be generated from received light.

The passage of claim 8 of the Hiyoshi patent cited in the final Office Action is entirely consistent with the cited portions of the Hiyoshi patent and the above discussion. Claim 8 of the Hiyoshi patent recites in part,

> "a light receiving device for receiving light from said light emitting device and for generating an output voltage according to an intensity of said received light."

As discussed above in reference to FIG. 15, it is clear that the output voltage measured across the phototransistor falls as light intensity increases. That means that the phototransistor indeed provides "an output voltage ***according to*** an intensity of said received light" but "according to" means decreasing as the light intensity increases.

Moreover, because the circuits incorporating the phototransistor of the Hiyoshi patent must incorporate a voltage supply and can ***never*** provide a voltage greater than the incorporated voltage supply, there is no reason to incorporate the Hiyoshi patent's circuitry into the MEMS circuit of the background of the present application. This is because the MEMS circuit would have to include the high voltage supply described at application page 2, lines 30-33 and also the circuitry of the Hiyoshi patent. The Hiyoshi patent would not solve any problems and would be useless in such a combination. Consequently, it would not be obvious to modify the MEMS devices of the background of the present application to incorporate the Hiyoshi patent's circuitry.

The Umeji patent does not cure the deficiencies of the Hiyoshi patent. The Umeji patent describes photothyristors 21-1 to 21-N that act as switches in response to light. Thus, the photothyristors can become conducting in response to light, but they cannot generate a voltage. The fact that the Umeji patent connects photothyristors in series does not in any sense suggest connecting the phototransistors of the Hiyoshi patent in series. The series connection used in the Umeji patent's photothyristors is uniquely useful to increased capacity of the photothyristor circuit. No similar advantage would occur with the Hiyoshi patent's phototransistors, where series connections would simply increase the total

resistance of the phototransistor and ***could not*** increase the voltage output by the Hiyoshi patent's ciruit, because the maximum output is entirely determined by the voltage supply of the Hiyoshi patent's circuit.

Applicant consequently submits that the combination of the background art, the Hiyoshi patent and the Umeji patent does not disclose or suggest the invention defined by claim 1. Specifically, the combination set forth in the Office Action does not ***receive light*** to ***generate a voltage*** of the type that could be used in the MEMS device. Instead, light received by the Hiyoshi patent's circuit changes the voltage available from a different voltage power source. Moreover, as discussed in detail above, there is no reason to make any of the combinations set out in the final Office Action. In fact, modifying the MEMS of the application background in light of the Hiyoshi patent would render the MEMS device inoperative. The Umeji patent provides no motivation to connect the phototransistors of the Hiyoshi patent in series and so this additional limitation of series connected devices would also not be met. Claim 1 and its dependent claims 2-4, 9 and 32-34 consequently distinguish over the cited art and are in condition for allowance.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310) 789-5100 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,

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